Versatile, Compact, Low-Cost, MEMS-Based Image Stabilization for Imaging Sensor Performance Enhancement, Phase I

Completed Technology Project (2004 - 2005)

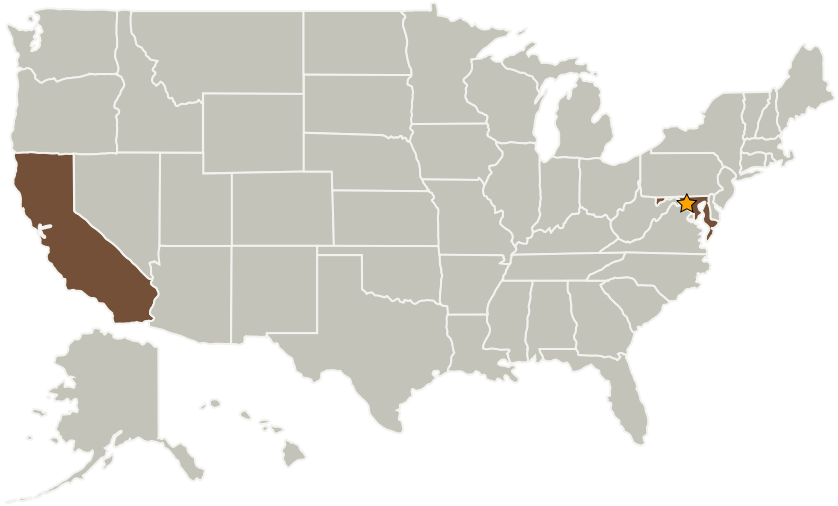
Project Introduction

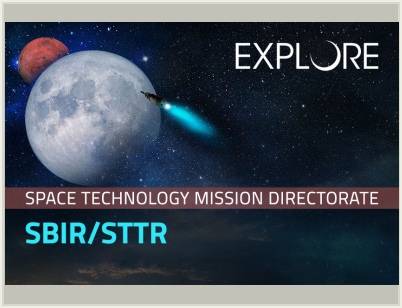
LW Microsystems proposes to develop a compact, low-cost image stabilization system suitable for use with a wide range of focal-plane imaging systems in remote sensing and other space-based applications. The system would be used in conjunction with integrated rotation sensors/gyroscopes to deflect light to counteract the effects of vibrations. This approach has the advantage over both image processing software and conventional gimbal-based approaches in being able to stabilize the image to higher frequencies without compromising on image size, resolution or speed. The mass-produced low-cost devices at the core of the system along with the post-assembly electronic tuning of the stabilization module also enable significant cost advantages over other stabilization approaches.

Anticipated Benefits

Stabilization of hand-held optical imaging systems such binoculars, video cameras, night vision systems. Stabilization of IR/night vision systems being integrated in passenger vehicles, and surveillance/security systems. Military applications in image stabilization for imagers in guided missiles, weapons sights and unmanned air surveillance. Image stabilization for IR, visible, and UV satellite or aircraft based imaging systems used in remote sensing/earth imaging, non-ground based telescopes where the image panning functions would be especially useful and structure/vehicle/equipment monitoring in extreme vibration environments.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
LW Microsystem, Inc.	Supporting Organization	Industry	Burlingame, California

Primary U.S. Work Locations	
California	Maryland

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Brian G Jamieson

Principal Investigator:

Christian Gutleben

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.5 Range Tracking, Surveillance, and Flight Safety Technologies